

1. (Currently Amended) An integrated surgical system for use in an orthopaedic operating room to enable a surgeon to carry out a computer aided surgical procedure on a subject, the integrated surgical system comprising:

a subject support on which the subject can be positioned;

a first wireless magnetic tracking system, the tracking system generating a magnetic field defining a working volume of the tracking system, the subject support being located at least partially within the working volume, and the tracking system including a tracking control system configured to track the position of a marker detectable by the tracking system within the working volume and generate a signal indicative of the position of the marker within a reference frame of the tracking system;

a registration system configured to register the position of the body part of the subject with an image of the body part of the subject within the reference frame of the tracking system;

at least a first display device configured to display a registered image of the body part of the subject and at least an image representative of a trackable implant during the computer aided surgical procedure;

a control system configured to integrate the functionalities of a plurality of the parts of the surgical system; and

a surgeon interface operable by the surgeon to control operation of the plurality of parts of the integrated surgical system.

2. (Currently Amended) The system of claim 1, further comprising a second further wireless tracking system, the second further wireless tracking system being an infrared wireless tracking system and being in communication with the control system and configured to generate a signal indicative of the position of a tracked element in the reference frame of the second further wireless tracking system.

3. (Currently Amended) The system ~~as claimed in~~ of claim 1, wherein the first display device is a touch sensitive display and comprises a part of the surgeon interface.

4. (Currently Amended) The system ~~of claim 1 as claimed in any of claims 1 to 3,~~  
~~wherein and~~ the surgeon interface ~~includes including~~ an orientation sensitive device  
operable by a surgeon to enter control commands.
5. (Currently Amended) The system ~~of claim 1 as claimed in any of claims 1 to 4,~~  
~~wherein and~~ the surgeon interface ~~includes including~~ a heads up display wearable by the  
surgeon and configured to display at least a one of the images selected from the group  
comprising: a captured image of the body part; an image of a model of the body part; a  
registered image of the body part; a video image of the body part; a representation of an  
implant; a representation of an instrument; an indication of the planned position of an  
implant, instrument or incision; and any combination of the preceding.
6. (Currently Amended) The system ~~of claim 1, as claimed in any of claims 1 to 5,~~  
~~and~~ further comprising a wall display unit, the wall display unit being configured to  
provide a plurality of image regions, each image region being capable of displaying a  
different image.
7. (Currently Amended) The system ~~of as claimed in claim 6,~~ wherein the different  
images are selected from the group comprising: a captured image of the body part; an  
image of a model of the body part; a registered image of the body part; a video image of  
the body part; a representation of an implant; a representation of an instrument; an  
indication of the planned position of an implant, instrument or incision; and any  
combination of the preceding.
8. (Currently Amended) The system ~~of claim 1 as claimed in any preceding claim,~~  
~~and wherein the system further comprises further comprising~~ a surgical site display  
device, the surgical site display device including an image display portion and a support,  
and wherein the image display portion is positionable over the surgical site of the patient  
in use.

9. (Currently Amended) The system ~~of as claimed in claim 8, and~~ wherein the surgical site display device includes an image capturing device having a field of view including the surgical site and generating a surgical site image, and wherein the surgical site image is displayed in the image display portion.
10. (Currently Amended) The system ~~of as claimed in claim 9,~~ wherein the surgical site image is a real time video image of the surgical site.
11. (Currently Amended) The system ~~of as claimed in claim 9 or 10,~~ wherein a further image is overlayed on the surgical site image and the further image and the surgical site image are displayed in the image display portion at the same time, and wherein the further image is selected from the group comprising: a captured image of the body part; an image of a model of the body part; a registered image of the body part; a video image of the body part; a representation of an implant; a representation of an instrument; an indication of the planned position of an implant, instrument or incision; and any combination of the preceding.
12. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~ and further comprising an image capturing device which captures real time video images, and wherein the real time video images are displayed in real time on at least one display device of the system.
13. (Currently Amended) The system ~~of as claimed in claim 12, and~~ further comprising a surgical light, the surgical light being suspended and being movable to different positions and orientations with respect to the operating table, and wherein the image capturing device is provided as a part of the surgical light.
14. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~ and further comprising an image storage device storing a plurality of captured images of the body part of the subject, the images of the body part being selected from the group comprising: X-ray images; CT scan images; and X-ray fluoro images.

15. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~  
and further comprising a body part model storage device, storing a plurality of generic 3-  
d models of different body parts.

16. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~  
and further comprising an implant image storage device storing 3d images of a plurality  
of implants useable in the computer aided surgical procedure.

17. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~  
and further comprising an instrument image storage device storing 3d images of a  
plurality of instruments useable in the computer aided surgical procedure.

18. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1,~~  
and wherein the registration system is an X-ray or X-ray fluoroscopy registration system.

19. (Currently Amended) The system ~~as claimed in of~~ claim 18, wherein the  
registration system is configured to capture at least a first image and a second image of  
the body part from different directions with the patient on the operating table.

20. (Currently Amended) The system ~~as claimed in of~~ claim 19, wherein the  
registration system includes a first x-ray source and a second x-ray source, a first detector  
positioned to capture the first image of the body part resulting from the first x-ray source  
and a second detector positioned to capture the second image of the body part resulting  
from the second x-ray source.

21. (Currently Amended) The system ~~as claimed in of~~ claim 20, wherein the first  
detector and the second detector are positioned above the subject support and the first x-  
ray source and the second x-ray source are positioned below the subject support.

22. (Currently Amended) The system ~~of claim 19 as claimed in any of claims 19 to 21~~, wherein the control system includes computer program instruction executable:

to generate a 3d image of the body part from the first image and second image;  
to determine the position of the body part in the reference frame of the tracking system;  
and

to register the 3d image of the body part with the position of the body part in the reference frame of the tracking system.

23. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1~~, wherein the tracking system includes a magnetic field generating subsystem and wherein the position of the magnetic field generating subsystem or subject support is movable so as to change the position or orientation of the working volume relative to the subject support.

24. (Currently Amended) The system ~~as claimed in of~~ claim 23, wherein a part of the subject support is movable and/or a part of the magnetic field generating subsystem is movable.

25. (Currently Amended) The system ~~as claimed in of~~ claim 21, wherein the first x-ray source and the second x-ray source are provided in a floor on which the subject support is located.

26. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1, and including further comprising~~ a video mixing and control subsystem which controls the display of images on a plurality of different image display parts of the system.

27. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1~~, wherein the control system includes computer program instructions providing an orthopaedic surgery workflow program.

28. (Currently Amended) The system ~~as claimed in~~ claim 27, wherein the control system includes computer program instructions providing an orthopaedic implantation planning program.
29. (Currently Amended) The system ~~as claimed in~~ claim 28, wherein the control system includes computer program instructions providing an orthopaedic image guided surgery program for implementing the orthopaedic procedure at least partially planned by the orthopaedic planning program.
30. (Currently Amended) The system ~~claim 27 as claimed in any of claims 27 to 29, and~~ wherein the tracking system passes data indicating the identity of a marker being tracked by the tracking system to the control system, and wherein the control system determines whether the marker is associated with the position of a bone, an implant or an instrument.
31. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1, and~~ further comprising at least one marker wirelessly trackable by the tracking system.
32. (Currently Amended) The system ~~as claimed in~~ claim 31, wherein the marker is attached to an implant.
33. (Currently Amended) The system ~~as claimed in~~ claim 31, wherein the marker is attached to an instrument.
34. (Currently Amended) The system ~~as claimed in~~ claim 31, ~~and~~ wherein the marker has a housing including a bone anchor for retaining the marker within the bone of the subject and wherein the marker is hermetically sealed in the housing.
35. (Currently Amended) The system ~~as claimed in~~ claim 34, ~~and~~ wherein the housing is configured to be percutaneously implantable within the bone of a subject.



36. (Currently Amended) The system ~~as claimed in any preceding claim of claim 1, and further comprising including a~~ prosthetic joint, the prosthetic joint comprising a first orthopaedic implant bearing a first marker wirelessly trackable by the tracking system and a second orthopaedic implant bearing a second marker wirelessly trackable by the tracking system.

37. (Currently Amended) The system ~~as claimed in of~~ claim 36, wherein the prosthetic joint is a prosthetic knee joint, the first orthopaedic implant is a femoral component and the second orthopaedic component is a tibial component, and the femoral component includes a locating pin which in use is located within the femur and the first marker is located at least partially within the locating pin, and the tibial component includes a keel which in use is located within the tibia and the second marker is located at least partially within the keel.

38. (Currently Amended) The system ~~as claimed in of~~ claim 36, wherein the prosthetic joint is a prosthetic hip joint, the first orthopaedic implant is an acetabular component and the second orthopaedic component is a femoral component, and the acetabular component is a cup and the first marker is located within a wall of the cup at an apex of the cup, and the femoral component includes a body and the second marker is located at least partially within the body.

39. (Currently Amended) The system ~~of claim 1 as claimed in any of claims 1 to 38,~~ wherein the system includes at least three markers wirelessly trackable by the wireless magnetic tracking system, and wherein:

a first of the three markers is configured to be powered by RF induction and is implantable in the bone of the subject;

a second of the three markers is configured to be powered by RF induction and is attachable to an orthopaedic implant for implanting in the body of the subject; and

a third of the three markers has a battery and is attachable to an instrument for use in the surgical procedure of implanting the orthopaedic implant in the body of the subject.

40-95 (Cancelled).